

R E M A R K S

Claims 1 to 4, 7 to 14, 16 and 17 as set forth in Appendix I of this paper are now pending in this case. Claims 5, 6 and 15 have been canceled, Claims 1 and 14 have been amended, and Claims 16 and 17 have been added as indicated.

Applicants have amended Claim 1 to further specify the nature of the thermoplastic copolyester constituent (a). To this end, applicants have incorporated the definition of the mandatory components (A) and (B) and the optional component (c) of the copolyester previously set forth in Claim 6. Accordingly, Claims 5, 6 and 15 have been canceled and Claim 14 has been revised. New Claim 16 has been added to further bring out the embodiment of applicants' molding composition which is addressed on page 10, indicated lines 45 to 46, of the application, and which comprises as an additional constituent a copolymer or block copolymer based on lactic acid and polyhydroxyalkanoates. New Claim 17 has been added to further bring out the embodiment of applicants' molding composition which is addressed on page 3, indicated lines 38 to 44, of the application, and which consists essentially of the biodegradable copolyester(s), the phyllosilicate(s), other fillers and auxiliaries. No new matter has been added.

The Examiner rejected Claims 1 to 4, 7, 8 and 10 to 13 under 35 U.S.C. §102(e) as being anticipated by, or in the alternative, under 35 U.S.C. §103(a) as being unpatentable in light of, the teaching of *Topolkaraev et al.* (US 6,492,452). Applicants' amendment obviates these issues since Claim 1 now presents the subject matter of Claim 6, albeit in independent form, and Claims 2 to 4, 7, 8 and 10 to 13 incorporate the features set forth in Claim 1 by reference¹). It is therefore respectfully requested that the respective rejections be withdrawn. New Claims 16 and 17 also incorporate the features of Claim 1 by reference and the Examiner's rejection is therefore also not applicable to new Claims 16 and 17. Favorable action is solicited.

The Examiner rejected Claim 9 under 35 U.S.C. §103(a) as being unpatentable in light of the teaching of *Topolkaraev et al.* when

1) If an independent claim is non-obvious under 35 U.S.C. §103, then any claim depending therefrom is non-obvious (*In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (CAFC 1988)). Anticipation is the ultimate or epitome of obviousness (*In re Grose*, 592 F.2d 1161, 201 USPQ 57 (CCPA 1979)).

taken in view of the disclosure of *Bagrodia et al.* (US 6,395,386). In this context, the Examiner applied the teaching of *Topolkaraev et al.* as showing that the features of applicants' composition which were incorporated into Claim 9 by reference to Claim 1 were at least rendered obvious under Section 103(a), and applied the disclosure of *Bagrodia et al.* as showing that a person of ordinary skill in the art would have been motivated to the composition in the manner specified in Claim 9. In light of applicants' amendment, the teaching of *Topolkaraev et al.* can no longer be deemed to render the features of applicants' composition which were incorporated into Claim 9 by reference to Claim 1 obvious within the meaning of Section 103(a). Accordingly, the subject matter of Claim 9 can no longer be deemed to be rendered obvious within the meaning of Section 103(a) by the teaching of *Topolkaraev et al.* when taken in view of the disclosure of *Bagrodia et al.* It is therefore respectfully requested that the respective rejection be withdrawn. Favorable action is solicited.

In accordance with its broadest definition which is provided in Claim 1 -previously Claim 6- applicants' invention relates to a molding composition characterized by the following requirements:

- 1) the composition comprises at least 30% by weight of a particular copolyester as constituent (a);
- 2) the composition comprises from 0.01 to 15% by weight of at least one hydrophobicized phyllosilicate as constituent (b); and
- 3) the composition is thermoplastic and biodegradable.

Additionally, the particular copolyester constituent (a) of applicants' molding composition is characterized by the following requirements:

- 1.1) the copolyester constituent (a) comprises at least three components, namely two different types of dicarboxylic acids (A) and a diol component (B);
- 1.2) the two different types of dicarboxylic acids (A) are
 - A₁₁) from 30 to 95 mol% of at least one aliphatic dicarboxylic acid, and
 - A₁₂) from 5 to 70 mol% of at least one aromatic dicarboxylic acid;
- 1.3) the diol component (B) is at least one diol component selected from the group consisting of C₂-C₁₂ alkanediols and C₅-C₁₀ cycloalkanediols and mixtures thereof;
- 1.4) the copolyester constituent (a) optionally further comprises a

component (C) selected from tri- and polyols, di- and polyamines, amino alcohols, hydroxycarboxylic acids, aminocarboxylic acids, tri- and polycarboxylic acids, bisoxazolines and isocyanates.

The Examiner rejected Claims 5, 6, 14 and 15 under 35 U.S.C. §103(a) as being unpatentable in light of the teaching of *Topolkaraev et al.* when taken in view of the disclosure of *Hyunkook et al.* (WO 92/13019) taking the position that the teaching of *Topolkaraev et al.* is generic to a composition which meets the foregoing requirements (1) to (3), and that the disclosure of *Hyunkook et al.* provides for copolyesters which meet the foregoing requirements (1.1) to (1.3). With regard to the latter, the Examiner specifically points to the requirements of *Hyunkook et al.* that their copolyesters have a dicarboxylic acid component wherein at least 85 mol% are aromatic dicarboxylic acids.

In contrast to the copolyesters which are addressed in *Hyunkook et al.*'s disclosure, the copolyesters of applicants' composition have only from 5 to 70 mol% of aromatic dicarboxylic acids in the dicarboxylic acid component. For this reason alone, a person of ordinary skill in the art could clearly not arrive at applicants' invention merely by modifying the teaching of *Topolkaraev et al.* in view of the disclosure of *Hyunkook et al.* as argued by the Examiner.

To establish a prima facie case of obviousness, three basic criteria must be met: First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success, and, finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Further, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and cannot be based on the applicant's disclosure²). For obviousness under Section 103(a) it is therefore not enough that the prior art can be modified in some manner so as to arrive at a claimed invention³). The teaching of *Topolkaraev et al.* is silent as to any aromatic dicarboxylic acids for use in poly-

2) Cf. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (CAFC 1991).

3) Cf. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (CAFC 1984); see also, eg., *Interconnect. Planning Corp. v. Feil*, 774 F.2d 1132, 227 USPQ 543 (CAFC 1985).

esters. The disclosure of *Hyunkook et al.* contains nothing which suggests that any modification of the polyesters is desirable, let alone a modification which resides in reducing the content of the aromatic dicarboxylic acid in the dicarboxylic acid component of the copolyester to from 5 to 70 mol%. There is, accordingly, nothing in the teaching of *Topolkaraev et al.* or in the disclosure of *Hyunkook et al.* which would provide the suggestion or motivation which is necessary to render applicants' composition prima facie obvious to a person of ordinary skill in the art.

It is also respectfully noted that the Examiner's argument that a person of ordinary skill can determine the amount in which *Topolka-raev et al.* add a biodegradable copolyester to their composition⁴⁾ is deemed to be in error. The Examiner relied in this context on the statements made by *Topolkaraev et al.* in col. 10, indicated lines 55 to 60, of *US 6,492,452* which provide that the particulate filler material is incorporated into the material addressed by *Topolkaraev et al.* in amounts of from 1 to 70%, preferably about 5 to 60%, and more desirably from 10 to 50%, by weight. The Examiner concluded that -based on a content of filler materials of from 5 to 60% by weight- the biodegradable polyesters would constitute the balance of the material and be present in amounts of from 40 to 95% by weight. However, the teaching of *Topolkaraev et al.* clearly distinguishes between the mandatory water-responsive polymers which lose their structural integrity within about 30 minutes when in contact with water⁵⁾ and optional biodegradable copolymers such as biodegradable copolyesters⁶⁾. The composition of *Topolkaraev et al.* comprises as mandatory constituents the water-responsive polymers and the filler materials⁷⁾. If the filler material is present in amount of from 5 to 60% by weight in the composition addressed by *Topolkaraev et al.*, then the balance of 40 to 95% by weight is made up by the mandatory water-responsive polymers or by a combination of the mandatory water-responsive polymers and the optional biodegradable copolyesters. Contrary to the Examiner's arguments, the information which is provided by *Topolkaraev et al.* is therefore insufficient to teach or even

4) Cf. inter alia page 3, lines 3 to 8, page 6, lines 9 to 14, and page 10, line 18, to page 11, line 2, of the Office action of October 13, 2004.

5) Cf. col. 5, indicated lines 61, to col. 6, indicated line 6, in conjunction with col. 6, indicated lines 12 to 15, of *US 6,492,452*.

6) Cf. col. 7, indicated lines 16 to 19, of *US 6,492,452*.

7) Cf. col. 3, indicated lines 24 to 27, of *US 6,492,452*.

suggest amounts in which the optional biodegradable polymers such as copolyesters be incorporated into the composition addressed by *Topolkaraev et al.* It is therefore respectfully requested that the rejection of Claims 5, 6, 14 and 15 (now Claims 1 and 14) under Section 103(a) based on the teaching of *Topolkaraev et al.* and the disclosure of *Hyunkook et al.* be withdrawn. The foregoing equally applies where the subject matter defined in applicants' Claims 2 to 4, 7 to 13, 16 and 17 is concerned which incorporate the requirements of Claim 1 by reference⁸). The subject matter of applicants' Claims 2 to 4, 7 to 13, 16 and 17 is therefore also deemed to be patentable under Section 103(a) over the teaching of *Topolkaraev et al.* and the disclosure of *Hyunkook et al.* Favorable action is solicited.

The Examiner rejected Claims 5 and 6 under 35 U.S.C. §103(a) as being unpatentable in light of the teaching of *Topolkaraev et al.* when taken in view of the disclosure of *Warzelhan et al.* (US 6,018,044) which relates to biodegradable copolyesters composed of

- i) a mixture consisting essentially of
 - from 35 to 95 mol% of adipic acid or ester-forming derivatives thereof or mixtures thereof,
 - from 5 to 65 mol% of terephthalic acid or ester-forming derivatives thereof or mixtures thereof, and
 - from 0 to 5 mol% of a sulfonate compound; and
- ii) a dihydroxy compound selected from C₂-C₆-alkanediols and C₅-C₁₀-cycloalkanediols.

The Examiner took the position that it would have been obvious to a person of ordinary skill in the art that the biodegradable copolyesters of *Warzelhan et al.* can be employed in the composition taught by *Topolkaraev et al.* The lack of water-responsiveness of the biodegradable copolyesters of *Warzelhan et al.* is, on the one hand, corroborated by the set-up which is used by *Warzelhan et al.* to investigate the biodegradability of the copolyesters⁹) and, on the other hand, corroborated by the investigations described by applicants in IIIa and IVa of the application¹⁰). In accordance with applicants' investigations according to IIIa and IVa injection molded specimens and films obtained from the molding compositions were exposed to mois-

8) Cf. fn. (1) on page 2 of this paper.

9) Cf. col. 12, indicated lines 8 to 24, of US 6,018,004, where the polymers are finely ground before their biodegradability is determined in an aqueous medium.

10) Cf. page 24, indicated line 43, to page 25, indicated line 30, of the application.

ture. Despite the clearly aqueous environment to which the samples were exposed, it required weeks -rather than minutes- before the samples lost structural integrity.

The biodegradable copolyesters which are disclosed by *Warzelhan et al.* are therefore not polymers which fall within the realm of the water-responsive polymers which are a mandatory constituent of the composition addressed by *Topolkaraev et al.*¹¹⁾. A person of ordinary skill in the art would not have been motivated by the teaching of *Topolkaraev et al.* or the disclosure of *Warzelhan et al.* to replace the water-responsive polymers of *Topolkaraev et al.*'s composition by a biodegradable copolyester as disclosed by *Warzelhan et al.* because doing so would destroy the suitability of *Topolkaraev et al.*'s composition for its intended purpose, namely providing articles which can be disposed of by flushing them down conventional toilets¹²⁾. If proposed modification would render the prior art invention which is being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification¹³⁾. A person of ordinary skill in the art would, therefore, at best have considered the biodegradable copolyesters of *Warzelhan et al.* as one of the optional biodegradable polymers which may be added according to *Topolkaraev et al.*'s teaching to the combination of the mandatory water-responsive polymers and the mandatory filler materials. With regard to such a modification, however, the teaching of *Topolkaraev et al.* and the disclosure of *Warzelhan et al.* fail to teach or suggest that the biodegradable copolyesters be added in amounts of at least 30% by weight as required in accordance with applicants' invention. Accordingly, the teaching of *Topolkaraev et al.* and the disclosure of *Warzelhan et al.* fail to meet the basic criteria for establishing a prima facie case of obviousness that there must be a reasonable expectation of success, and, that the prior art references must teach or suggest all of the claim limitations¹⁴⁾. The mere fact that the prior art can be modified in some manner so as to arrive at a claimed invention does not support a conclusion of obviousness where the prior art fails to suggest the desirability of the specific modification which is required¹⁵⁾. In light of the foregoing, the

11) Cf. ftn. (5) on page 5 of this paper.

12) Cf. col. 1, indicated lines 29 to 49, of *US 6,492,452*.

13) Cf. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (CAFC 1984).

14) Cf. ftn. (2) on page 4 of this paper.

15) Cf. ftn. (3) on page 4 of this paper.

teaching of *Topolkaraev et al.* taken in view of the disclosure of *Warzelhan et al.* is clearly not sufficient to render applicants' molding composition prima facie obvious within the meaning of Section 103(a). It is therefore respectfully requested that the rejection of Claims 5 and 6 (now Claim 1) under Section 103(a) based on the teaching of *Topolkaraev et al.* and the disclosure of *Warzelhan et al.* be withdrawn. The foregoing equally applies where the subject matter defined in applicants' Claims 2 to 4, 7 to 14, 16 and 17 is concerned which incorporate the requirements of Claim 1 by reference¹⁶⁾. The subject matter of applicants' Claims 2 to 4, 7 to 14, 16 and 17 is therefore also deemed to be patentable under Section 103(a) over the teaching of *Topolkaraev et al.* and the disclosure of *Hyunkook et al.* Favorable action is solicited.

REQUEST FOR EXTENSION OF TIME:

It is respectfully requested that a one month extension of time be granted in this case. The respective \$120.00 fee is paid by credit card (Form PTO-2038 enclosed).

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees, to Deposit Account No. 14.1437. Please credit any excess fees to such deposit account.

Respectfully submitted,
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Encl.: THE LISTING OF CLAIMS (Appendix I)

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¹⁶⁾ Cf. ftn. (1) on page 2 of this paper.